

**TECHNICAL REVIEW DOCUMENT**  
**For**  
**RENEWAL of OPERATING PERMIT 95OPWE096**

Thermo Cogeneration Partnership, L. P., a Delaware Limited Partnership  
Ft. Lupton Cogeneration Facility  
Weld County  
Source ID 1230250

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Revised September, October and November 2010

**I. Purpose:**

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The current Operating Permit was issued October 1, 2006. The expiration date for the permit is October 1, 2011. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted May 17, 2010, comments on the draft permit and technical review document received September 8, 2010 via e-mail, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

**II. Description of Source**

This facility consists of a cogeneration facility defined under Standard Industrial Classification 4931. Electricity for sale is produced by five (5) combustion turbines, equipped with duct burners. Each combustion turbine serves a generator rated at 57.412 MW (name-plate). Exhaust gas from the combustion turbine, which may be

heated further by duct burners, is used to either generate electricity or to heat a nearby tomato greenhouse. There are two steam turbines, each rated at 52.220 MW (name-plate). Other significant emission units at the facility are a cooling tower, emergency back-up generator and fire pump.

The facility is located in Weld County at 6811 Weld County Road 31, in Ft. Lupton, CO. This facility is located in an area classified as attainment for all pollutants except ozone. It is classified as non-attainment for ozone and is part of the 8-hr Ozone Control Area as defined in Regulation No. 7, Section II.A.1.

There are no affected states within 50 miles of the facility. Rocky Mountain National Park, a federal Class I area is within 100 km of this facility.

Based on the information provided in the renewal application, no changes have been made to any of the significant emission units.

The summary of emissions that was presented in the Technical Review Document (TRD) for the renewal permit has been reproduced here. Since there have been no changes to permitted emission and/or fuel consumption limitations and no new emission units have been added to the facility, the potential to emit (PTE) has not changed. Both potential and actual emissions (in tons per year) at the facility are as follows:

Emission Unit	Potential to Emit (tons/yr)						
	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub> <sup>1</sup>	CO	VOC	HAPS
Turbine/Duct Burner 1 (S001)	16.81	16.81	2	589.	90.51	9.64	See Table on Page 7
Turbine/Duct Burner 2 (S002)	16.81	16.81	2		90.51	9.64	
Turbine/Duct Burner 3 (S003)	16.81	16.81	2		90.51	9.64	
Turbine/Duct Burner 4 (S004)	16.81	16.81	2		90.51	9.64	
Turbine/Duct Burner 5 (S005)	16.81	16.81	2		90.51	9.64	
Emergency Gen. (S006) <sup>2</sup>	0.27	0.26	0.59	3.81	1.49	0.26	
Fire-Pump (S007) <sup>2</sup>	0.07	0.07	0.14	1.52	0.25	0.07	
Cooling Tower (S011) <sup>3</sup>	9.5	9.5				1.23	
Total	93.89	93.88	10.73	594.33	454.29	49.76	10.55

<sup>1</sup> Each turbine/duct burner has individual NO<sub>x</sub> limits, however, the total NO<sub>x</sub> limits for all units is more restrictive, so the total limit is shown in the table.

<sup>2</sup> Emissions shown are from the original construction permits. Permitted emissions that were below the de minimis level (2 tons/yr) were not included in the original Title V permit and the subsequent renewal permit.

<sup>3</sup> VOC emissions are based on an emission factor of 0.0527 lb/mmgal for chloroform. Since VOC emissions are below the APEN de minimis level (2 tons/yr), the VOC emission limit is not included in the permit.

The criteria pollutant PTE shown above is based on permitted emission limits for the turbines, duct burners, engines and cooling tower. The breakdown of HAP emissions by emission unit and individual HAP is provided on page 7 of this document. The PTE of HAP emissions is based on AP-42 emission factors, permitted fuel consumption limits and heat values of 1020 Btu/SCF for natural gas and 137,000 Btu/gal for diesel fuel.

Emission Unit	Actual Emissions (tons/yr)						
	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	HAPS
Turbine/Duct Burner 1 (S001)	5.40	5.40	0.98	72.05	14.92	4.65	0.58
Turbine/Duct Burner 2 (S002)	5.16	5.16	0.90	67.63	25.30	4.44	0.56
Turbine/Duct Burner 3 (S003)	5.35	5.35	0.93	69.28	29.65	4.64	0.58
Turbine/Duct Burner 4 (S004)	5.42	5.42	0.95	63.45	24.87	4.69	0.59
Turbine/Duct Burner 5 (S005)	5.05	5.05	0.92	61.46	25.32	4.36	0.55
Emergency Gen. (S006)				0.42			
Cooling Tower (S011)	5.4	5.4					
<b>Total</b>	<b>31.78</b>	<b>31.78</b>	<b>4.68</b>	<b>334.29</b>	<b>120.06</b>	<b>22.78</b>	<b>2.86</b>

Actual emissions are based on the APENS submitted on March 31, 2010 (2009 data).

### MACT Requirements

Although the facility is not a major source for HAPS, the EPA has been promulgating rules for area sources (sources that are not major), those requirements that could potentially apply to this facility are discussed below:

### Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

The final rules for paint stripping and miscellaneous surface coating were published in the Federal Register on January 9, 2008 and apply to area sources that perform paint stripping operations using methylene chloride, spray application of coatings to motor vehicles and mobile equipment and spray application of coatings that contain the target

HAPS (chromium, lead, manganese, nickel or cadmium). As indicated in 40 CFR Part 63 § 63.11170(a)(2) and (3), spray applications (to motor vehicles and using coatings that contain the target HAPS) that meet the definition of facility maintenance are not subject to the requirements in this rule. The Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance. The source indicated that none of the paint stripping chemicals used at the facility contain methylene chloride; therefore, the provisions in 40 CFR Part 63 Subpart HHHHHH do not apply.

#### Reciprocating Internal Combustion Engines (RICE) (40 CFR Part 63 Subpart ZZZZ)

Final revisions to the RICE MACT were published in the Federal Register on March 3, 2010 and these revisions address existing (commenced construction prior to June 12, 2006) compression ignition engines at area sources. There are diesel-fired engines driving an emergency generator and fire pump included in Section II of the permit. Both engines are considered emergency engines. According to the current permit, these engines commenced operation in May 1994, so they are existing engines and are subject to requirements in MACT ZZZZ. Since these engines are considered emergency engines they are subject to management standards (oil and filter change and inspect air cleaners, hoses and belts). The source is required to comply with these requirements by May 3, 2013. The appropriate applicable requirements will be included in the renewal permit.

#### Compliance Assurance Monitoring (CAM) Applicability

CAM was reviewed for this facility during the first renewal (issued October 1, 2006). At that time it was determined that CAM did not apply to the turbines, since the Title V permit specified a continuous monitoring method for NO<sub>x</sub> (per 40 CFR Part 64 § 64.2(b)(1)(vi)) and there were no other emission units equipped with a control device. Since there have been no physical changes to the existing emissions units and no new units added since the first renewal, there is no change to the CAM applicability at this facility.

#### Greenhouse Gases

In 2009 and 2010, EPA issued two rules related to Greenhouse Gases (GHG) that may affect your facility.

On October 30, 2009, EPA published a rule for the mandatory annual reporting of GHG emissions to EPA from large GHG emissions sources in 40 CFR part 98. You may be required to identify GHG emissions in future Title V permit applications. Such identification may be satisfied by including some or all of the information reported to EPA to meet the GHG reporting requirements.

On May 13, 2010, EPA issued a final rule that sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. Future new construction and/or modifications at your facility may be subject to PSD review for GHG emissions.

### **III. Discussion of Modifications Made**

#### **Source Requested Modifications**

The source submitted their renewal application on May 17, 2010. In their renewal application, the source did not request any changes to their permit.

#### **Other Modifications**

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments, to the Thermo Ft. Lupton Cogeneration Facility Renewal Operating Permit with the source's requested modifications. These changes are as follows:

#### **Page Following Cover Page**

- The monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

#### **Section I – General Activities and Summary**

- Changed the citation for the definition of 8-hour ozone control area in Condition 1.1.
- Condition 2 (alternative operating scenario for turbine replacement) was revised to clarify that only temporary turbine replacement is allowed (the phrase “and permanent” was removed from the first line in the first paragraph under Condition 2).

## Section II.2 – Emergency Generator

- Added the appropriate 40 CFR Part 63 Subpart ZZZZ requirements – management practices (oil and filter change, inspect air cleaner and inspect hoses and belts). Note that the Subpart ZZZZ requirements are included in “new” Section II.6.
- Added the appropriate 40 CFR Part 63 Subpart A requirements

Since this engine is not subject to any emission limitations, monitoring requirements, notification and reporting requirements the requirements in §§ 63.7, 63.8, 63.9 and 63.10 do not apply. In addition, since this emission unit is an existing unit the requirements in § 63.5 (preconstruction review and notification requirements) do not apply. Finally, Table 8 of Subpart ZZZZ indicates that operation and maintenance requirements in 63.6(e) do not apply. Therefore, the permit will only include the prohibition and circumvention requirements in § 63.4.

## Section II.3 – Diesel Fired Emergency Fire Pump

- Corrected the references to other condition numbers in Conditions 3.4.1 and 3.4.5.
- Added the appropriate 40 CFR Part 63 Subpart ZZZZ requirements – management practices (oil and filter change, inspect air cleaner and inspect hoses and belts). Note that the Subpart ZZZZ requirements are included in “new” Section II.6.
- Added the appropriate 40 CFR Part 63 Subpart A requirements

As indicated above for the emergency generator, only the prohibition and circumvention requirements in § 63.4 will be included in the permit.

## Section III – Acid Rain Requirements

- Revised the table in Section 2 to include calendar years corresponding to the relevant permit term for the renewal.

## Section V – General Conditions

- Revised the version date.
- General Condition 29 was revised by reformatting and adding the provisions in Reg 7, Section III.C as paragraph e.

## Appendices

- Corrected minor typos in the tables in Appendices B and C

**Total HAP Emissions (tons/yr) from Thermo Cogeneration Partnership - Ft. Lupton Facility**

Emission Unit	formaldehyde	acetaldehyde	toluene	benzene	acrolein	xylene	Chloroform	hexane	dichlorobenzene	nickel	cadmium	chromium	propylene	Total
All Turbines	3.76	0.21	0.69	0.06	0.03	0.34								5.09
All DBs	0.17		7.61E-03	4.70E-03				4.03	2.69E-03	4.70E-03	2.46E-03	3.13E-03		4.22
Emerg. Gen	1.31E-03	8.54E-04	4.55E-04	1.04E-03	1.03E-04	3.17E-04							2.87E-03	6.95E-03
Fire Pump	3.50E-04	2.27E-04	1.21E-04	2.76E-04	2.74E-05	8.44E-05							7.64E-04	1.85E-03
Cool Twr							1.23							1.23
Total	3.93	0.21	0.70	0.07	0.03	0.34	1.23	4.03	2.69E-03	4.70E-03	2.46E-03	3.13E-03	3.64E-03	10.55

The heating value of natural gas was presumed to be 1020 Btu/scf and the heating value of diesel was presumed to be 137,000 Btu/gal  
HAP emissions for the turbines and duct burners are based on the total fuel consumption limit.